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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER
BAYARD, EMMANUEL

ART UNIT	PAPER NUMBER
2631	7

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Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 07-01)

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>24 March 2003</u> .

2a)☐ This action is **FINAL.**   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-30* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

    If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____ .

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

    a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)	4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)	5) ☐ Notice of Informal Patent Application (PTO-152)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .	6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 103

1.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness

rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

2.   Claims 1-5, 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mathe

U.S. Patent No 6,389,069 B1 in view of Rabipour et al U.S. Patent No 5,577,117.

As per claim 1, Mathe al discloses a digital adaptive equalizer for a data path

communication comprising: a first programmable filter capable (see figs. 1, 6 elements 10, 188

and col.1, lines 55-67 and col.3, lines 47-49) of being programmed to implement any of a plurality

of transfer functions (see fig.1 elements 55 56 and col.5, lines 35, 50) ; a multiplexer (see fig.1

element 12 and col.4, lines 3-6);a second digital filter (see fig.1 element 20 and col.3, line 53 and

col.5, lines 60-61) for receiving an output from said first programmable filter.

However , Mathe does not teach a filter selector to select any one of said plurality of

transfer functions to select any one of said plurality of transfer functions).

Rabipour et al teaches a filter selector (see fig. 1 element 450 and col.3, lines 20-25 and

col.4, line 34 and col.5, lines 50-67 and col.6, lines 12-25, 61-64) to select appropriate filter

characteristics is functionally equivalent to the claimed (any one of said plurality of transfer functions to select any one of said plurality of transfer functions).

It would have been obvious to one of ordinary skill in the art to implement the teaching of Rabipour into Mathe as to select from the main filter characteristics the filter characteristic which provides the best mean square fit to a compensated frequency response which is flat as taught by Rabipour (see col.6, lines 22-25).

As per claim 2, the equalizer of Mathe does includes an infinite impulse response (see col.5, line 52).

As per claim 3, the equalizer of Mathe does includes a finite impulse response (see col.3, line 61).

As per claim 4, the equalizer of Mathe would include a transfer function to best fit an input data as to remove DC offset and provide gain correction circuit.

As per claim 5, the equalizer of Mathe would include a transfer function adapted based on a least mean square as to provide the best mean square fit to a compensated frequency response which is flat.

As per claims 11-13, it would have been obvious to one ordinary skill in the art to implement a selection of plurality of any one of at least four sets of coefficients available to select from the main filter characteristics the filter characteristic which provides the best mean square fit to a compensated frequency response which is flat. As taught by Rabipour (see col.6, lines 22-25).

Claim Rejections - 35 USC § 103

3.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness

rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

4.   Claims 6-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mathe et al

U.S. Patent No 6,389,069 B1 in view of Rabipour et al U.S. Patent No 5,577,117 and further in

view Boyd et al U.S. Patent No 6,438,162 B1.

As per claim 6, Mathe and Rabipour in combination discloses all the features of the

claimed invention except a T1 communication path and an E1 communication path.

Boyd et al teaches a digital filter having a T1 communication path and an E1

communication path (see abstract and col.2, line 35).

It would have been obvious to one of ordinary skill in the art to implement the a T1

communication path and an E1 communication path of Boyd into Mathe and Rabipour so

minimal configuration by the user could be implemented while using high speed applications.

As per claims 7-8, the equalizer of Boyd does include twisted pair or coaxial cable (see

fig.1 element 1 and col.3, lines 21, 51,). Furthermore implementing such cable into and Rabipour

would have been obvious to one skilled in the art as to provide output signal which ideally has a

waveform identical to that originally transmitted.

As per claim 9, the communication path of Mathe would include a wireless medium so

that any digital coded signal could be accurately equalized over free space.

As per claim 10, it would have been obvious to one of ordinary skill in the art to

implement an analog to digital converter to received T1/E1 signal so that digital filter could

accurately remove noise or interference in the incoming digital signal.

Claim Rejections - 35 USC § 103

5.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness

rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

6.   Claims 14-17, 20-25 and 27-30 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Mathe U.S. Patent No 6,389,069 in view of Simmons et al U.S. Patent No 6,195,414 B1.

As per claims 14 and 24, Mathe disclose a method of digitally equalizing a received data

signal comprising: firstly filtering said received data signal using a first digital filter (see fig.1

element 18 and col.3, line 52); a FIR equalization (see fig.1 element 20 and col.2, lines 38-60 and

col.6, lines 5-45) is functionally equivalent to the claimed (adaptively adjusting) an output of said

first digital filter to accurately match an inverse response of a transmission channel used to

transmit said received data signal.

However Mathe does not teach filtering said received **T1/E1**.

Simmons teaches said received **T1/E1** (see fig.3 element 340 and col.5, line 53 and col.6, line 46)).

It would have been obvious to implement the teaching of Simmons into Mathe as to s pass digital bit stream through digital interface which suitably interfaces to a particular source of the bit stream.

As per claim 15, the system of Mathe would include detecting a periodic pattern of said received T1/E1 as to accurately provide gain correction to the digital equalization circuit..

As per claim 16, the system of Mathe would include freezing said adaptive adjustment to accurately provide gain correction to the digital equalization circuit.

As per claims 17 and 25, the system Mathe includes an IIR (see fig.1 element 18).

As per claims 20, 21 and 27, the system of Mathe includes a second filter (see fig.1, element 20).

As per claim 22, the system of Mathe inherently includes adaptively adjusting coefficients for said finite impulse response to accurately provide gain correction to the digital equalization circuit..

As per claim 23, the system of Mathe would include a least mean square algorithm as to provide the best mean square fit to a compensated frequency response which is flat .

As per claim 28, the system of Mathe includes a FIR (see fig.1 element 20).

As per claim 29, the system of Mathe include adaptively adjusting coefficients for said finite impulse response.

As per claim 30, the system of Mathe would include a least mean square algorithm to provide the best mean square fit to a compensated frequency response which is flat .

Claim Rejections - 35 USC § 103

7.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8.   Claims 18-19 and 26 are rejected under 35 U.S.C. 103(a) being unpatentable over Mathe et al U.S. Patent No 6,389,069 B1 in view of Boyd et al U.S. Patent No 6,438,162 B1. and further in view Rabipour et al U.S. Patent No 5,577,117

As per claims 18 and 26, Mathe and Boyd in combination disclose all the features of the claimed invention except selects and implements one of a plurality of transfer function coefficient available for said digital filter.

Rabipour teaches a filter selector (see fig. 1 element 450 and col.3, lines 20-25 and col.4, line 34 and col.5, lines 50-67 and col.6, lines 12-25, 61-64) to select appropriate filter characteristics is functionally equivalent to the claimed (selecting and implementing one of a plurality of transfer function coefficient available for said digital filter).

It would have been obvious to one of ordinary skill in the art to implement the teaching of

Rabipour into Mathe and Boyd as to select from the main filter characteristics the filter

characteristic which provides the best mean square fit to a compensated frequency response which

is flat as taught by Rabipour (see col.6, lines 22-25).

As per claim 19, it would have obvious to one skill in the art to implement the step of

setting an initial value to said plurality of transfer function into Mathe and Boyd as to enhance the

system capability to accurately compensate the digitalized signal in the equalizer.

Conclusion

9.   The prior art made of record and not relied upon is considered pertinent to applicant's

disclosure.

Fennell et al U.S. Patent No 5,335,357 teaches a simulcast Scheduler.

Phillips U.S. Patent No 6,210,334 B1 teaches a digital medical diagnostic.

Matsuo et al U.S. Patent No 6,553,121 B1 teaches a three-dimensional acoustic.

Gray et al U.S. Patent No 5,880,973 teaches a signal processing system.

Blazo U.S. Patent No 5,754,437 teaches a phase measurement.

Any inquiry concerning this communication or earlier communications from the examiner should

be directed to Emmanuel Bayard whose telephone number is (703) 308-9573. The examiner can

normally be reached on Monday-Thursday from 8:00 AM - 5:30 PM. The examiner can also be

reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Chi Pham, can be reached on (703) 305-4378. The fax phone number for this Group

is (703) 872-9314.

Any inquiry of a general nature or relating to the status of this application or proceeding

should be directed to the Group receptionist whose telephone number is (703) 305-3800.

Emmanuel Bayard

Patent Examiner

May 19, 2003